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ORIGINAL RESEARCH ARTICLE

Pharmaceutical Standardization of *Guduchi Satva*

Patil Shilpa*[1] and Chaudhary A.K[2]

[1]*Junior Resident III, Department of Rasa Shastra, Faculty of Ayurveda , IMS, BHU, Varanasi, India*
[2]*Associate professor, Department of Rasa Shastra, Faculty of Ayurveda , IMS, BHU, Varanasi, India*

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ABSTRACT

In the present Study, a single formulation of *Guduchi i.e Guduchi Satva* is prepared by considering the different size(diameter) of the *Guduchi* stem in three consecutive batches so as to evaluate the ideal size of the *Guduchi* stem which should be used to obtained the more yield. Standard operative procedures are followed throughout the study. The result of the study revealed that the yield of *Guduchi satva* was more in small size stem (diameter 1.0cm- 1.5cm) than medium (diameter 2.0cm-2.5cm) and large (diameter 2.5cm-3.0cm) size of stem. The findings can be considered in further pharmaceutical validation of *Guduchi satva*.

Keywords: *Guduchi, Guduchi Satva,* Size of the *Guduchi* stem.

INTRODUCTION

"Pharmaceutical processes are techniques which modify the natural products into therapeutically potent dosages form which are easily absorbable in the biological systems by specific processing methods (*Sanskaras*) resulting in the assimilation of the newer properties and this modification is brought about by dilution, application of heat, clarification ,emulsification, storage, maturing, flavouring, impregnation, preservatives and converting the substance into acceptable quality *Guduchi* is one among the most important medicinal plants of India and various formulations of *Guduchi* are mentioned in different Ayurvedic classics.

Tinospora Cordifolia [1] (willd) Mires ex Hook. F & Thoms. (Family: Menisprrmaceae) commonly known as "*Amrita*" or "*Guduchi*" is an important drug of Indian system of medicine and used since time immemorial. It is a perennial climber found throughout Tropical India, drug is used in fresh form The drug is well known Indian bitter [2] and prescribed in fevers, Diabetes, Dyspepsia, Jaundice, Urinary problems, skin diseases chronic diarrhoea and dysentery[3] . It has been also indicated in the treatment of leprosy, Helmenthiasis and rheumatoid arthritis [4].

The best example of the secondary derivatives of the five basic kalpna (Upakalpana) is *Guduchi satva*, '*Satva'* is aqueous extractable solid substance collected from herbal drug. The commonest example is *Guduchi satva*, which is the starch of *Tinospora cordifolia*. In Ayurvedic system of medicine the solid white extract of *Tinospora cordifolia* (willd.) Mier is known as *Guduchi satva* which is more commonly prescribed for various types of fevers hence it is known as Indian Quinine. In Unani System mostly "*Sat Giloe*" is incorporated in the preparations. "*Arq Giloe*" Prepared from the fresh plant is considered a febrifuge, while "*Arq Maul Laham Mako-Kashiwala*" is a general tonic [5].

MATERIALS AND METHODS

Procurement of raw material:

The raw drug, *Guduchi* stem was collected from BHU campus this raw drug was authentified and analyzed before preparing *Guduchi Satva*,

Formation of Batches

The stem was collected of the three different sizes and in three different months.

Batch 1:Consist of *Guduchi* stem (2kg) of approximately 2.5-3.0 cm diameter and having dark brown colour and abundant covering, collected in the month of November 2011.

Batch 2: Consist of *Guduchi* stem (2kg) of approximately 2.0-2.5 cm diameter of slightly

***Corresponding Author:** Patil Shilpa, **Email:** Shilpa11151@gmail.com

brown coloured covering collected in the month of December2011.

Batch 3: Consist of *Guduchi* stem (2kg) of approximately 1-1.5cm diameter of green coloured and no brown covering is collected in the month of January2012.

Guduchi stem was collected. The physical impurities were removed & washed thoroughly with water. Stem was cut into pieces of 3-4cm and crushed completely to convert into slimy paste. This mass was further mixed with 4 times of potable water in stainless vessel and kept for soaking overnight (12 hours) Next morning this mass was macerated throughout in water for about 1 hour. Filtered slowly through a clean four folded cotton cloth .The liquid was kept aside undisturbed for 5 hours for settlement. The supernatant liquid was decanted carefully heavy sediments, which was settled at the bottom then it is shifted into a tray and air dried under running fan, collected and stored as *Guduchi satva* in airtight jars.

OBSERVATIONS

1. As the maceration was completed after 1 hour the sliminess of the pulp was reduced almost.
2. At the time of maceration the colour of potable water was turned turbid.
3. The colour of liquid after straining with four folded cloth was greenish brown.
4. The colour of final product was pale white in batch 1 and 2 but it is clear white in batch 3.

DISCUSSION

According to the A.F.I.[6] *'Satva'* is aqueous extractable solid substance collected from herbal Plant. The concept of herbal extract is good in providing some degree of standardization to the herbal medicine. As the active principle of herbal origin drug varies geographically and seasonally, there is a need to have minimum quantity of active principle or marker compound in the extract for efficacy. One of the advantages to use of herbal extracts for reducing the dose and also has more shelf life or stability and increase the bioavailability.

Word "*Guduchi Satva*" For the very first time mentioned in "*Rasendra mangalam*" [7] in context of "*Panchamruta Ras.*" due to its usefulness it is incorporated in the various preparations like *Panchamruta Ras. Guduchi satva* preparation has been mentioned *in Yoga Ratnakar , Rasa Yoga Sagar, Siddhayoga Sangraha, Dravyaguna vigyana* etc..All these texts have mentioned different methods of preparation.

According to*Yoga Ratnakar* [8]*Guduchi* stem was cut into small pieces and triturated well in water then it was filtered through cloth and supernatant liquid is decanted and *shankhanibha* sediment is collected .the quantity of liquid and overnight soaking is not stated, in this reference *Shankhanibha* reveals the colour of *satva i.*e White colour.

According to *Siddha Yoga Sangraha Guduchi* [9] stem is cut into small pieces and pounded well then it was kept for overnight soaking in water. Next day it was filtered through cloth, allowed for sedimentation, supernatant liquid is decanted and sediment was collected. In this reference soaking was mentioned but the volume of liquid is not mentioned author advised to take the water quantity sufficient.

According to '*Rasa Yoga Sagar*[10] *''Guduchi satva'* is called as *Guduchimodak. 'Rasa Yoga Sagar'* has also not mentioned the quantity of water but it stated that the *kalka* should be made so fine by trituration & the colour of *satva* is described as *Shubhrakhandanibha*. In commentary of *Bhavaprakash* four times of water for soaking and time of soaking (12-24 hrs) was also mentioned.

The quantitative evaluation of *satva* is not mentioned clearly in any classical texts. Only sedimentation and filtration is described. There is also variation in the soaking time i.e. 12hrs-24hrs. In the present study, the different sizes of *Guduchi* stem was collected to evaluate the quantitative variation of those sizes of stem because no any classical texts has mentioned that which size of *Guduchi* stem is to be used for *satva* preparation. So, pharmaceutically *Guduchi satva* was prepared to find out which size of *Guduch*i stem is best for achieving best yield of the *satva.*

Earlier scholars worked in the pharmaceutical aspect of *Guduchi satva* reported quantitative variation in the final product.

Mehra P.N. [11] (1969) *et al*. Reported yield of 0.48*% satva* with fresh stem and 1.20% with dried stem.

Preeti Salunke [12] (1997) *et al*. Reported extraction of 0.1% of *satva* from fresh stem.

Sharma Rohit [13] (2012) *et al*, Reported extraction of 1.2%,2.7% and 0.76% yield of *Satva* from thin, medium and thick stem respectively These variations may be due to difference in the species, size of the stem, collection time and levels of the maturity of the plant. The current study is performed with the different sizes of the stem and different collection time, so that to find out the

ideal size of the stem and ideal season of the collection of it for obtaining maximum yield of the *Satva.* In Batch 1 (diameter 2.5 -3.0 cm) *Guduchi* stem with abundant brown covering took more time and effort for pounding. Sliminess was not as much as that observed for batch 3 (diameter1.0-1.5 cm). Batch 2 (diameter 2.0-2.5 cm) also shown less sliminess of the pulp than batch 3 but more than batch 1.The colour of the water in which *Guduchi* was soaked was turned as yellowish in batch 3 while that water shows greenish brown colour in batch 1 and 2. After the maceration sliminess of the pulp was reduced because of coming of the starch in the water from fibrous parts of the stem. We were very careful while decantation process since there was the chances of the *Satva* to be a waste. All samples took total time of nine days for processing i.e. three days for each batch starting from procurement of the material to the complete drying of the *Satva*. Total yield and organoleptic characteristics and details of process validation were given in the tabular form (Table 1 & 2).

Diameter of The *Guduchi* Stem was 2.5 to 3.0 cm (Batch 1), 2.0-2.5 cm (Batch 2) &1.0-1.5 cm (Batch3) and months were November, December & January respectively for Batch 1, 2 & 3. Four times of the water and overnight soaking was common to every batch we got yield of *Satva* as 25.12gm, 33.00 gm and 67.74 gm i.e. 1.25%, 1.65%, and 3.24% in three batches respectively (table no.1). The yield of The *Guduchi Satva* greatly depends on the size, environment, association and cellular activities; maximum metabolic activity of the starch grains in cellular constituents matures at after preliminary development. During this phase percentages of starch also varies. Small size of the stem collected in the month of January and the stem is not having the brown coating gives more yield. Large size stem gives poor yield as compared to medium size stem. Organoleptic Characters shows variation in colour of *Satva* in batch 3 it is clear white but pale white in batch 1 and batch 2 (Table 2).

Table 1: Process Validation for *Guduchi Satva*

Parameters	BATCH 1	BATCH 2	BATCH 3
Fresh Guduchi stem(kg)	2.	2	2
Diameter of stem(cm)	2.5 -3.0	2.0-2.5	1.0-1.5
Size of stem pieces (cm)	3-4cm	3-4cm	3-4cm
Total quantity of potable water(lit)	8	8	8
Duration for soaking(hrs)	12	12	12
Total time taken for maceration(hrs)	1	1	1
Total time taken for sedimentation(hrs)	5	5	5
Total time taken for drying(hrs)	4	4	4
Total yield(gm)	25.12	33	64.74
% yield	l.25%	1.65%	3.24%

Table 2: Organoleptic characteristics of *Guduchi Satva*

S. No	Characteristics	Batch 1	Batch 2	Batch 3
1	Colour	Pale white	Pale white	Clear white
2	Smell	No specific	No specific	No specific
3	Taste	Slight Bitter	Slight Bitter	Slight Bitter
4	Touch	Smooth	Smooth	Smooth

Fig 1.1: Green *Guduchi* Stem

Fig 1.2 : Stem of the *Guduchi* with brown covering

Pharmaceutical processing of *Gududchi Satva*

Fig 2.1: Pounding of *Gududchi*

Fig 2.2: Soaking of *Gududchi*

Fig 2.3 : Filtrate of *Guduchi*

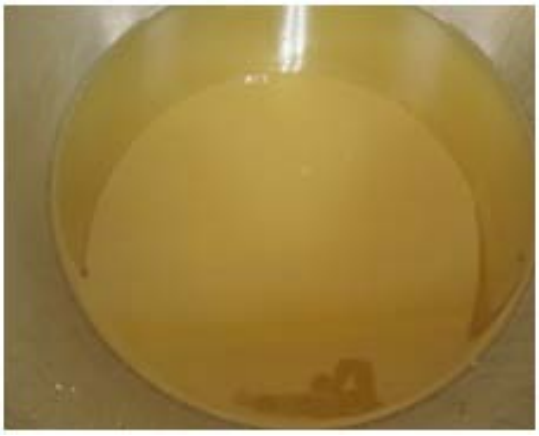

Fig 2.3 : *Guduchi Satva*

CONCLUSION

The present study concludes that Maximum yield of *Satva* (3.24%) is obtained from small size of the stem and suitable season is winter season (January) it may be adopt for the future utilization in pharmaceutical companies.

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